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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/864,335 | 05/25/2001 | Naomi Sugimoto | 209045US2 | 2280 |
| 22850 | 7590 | 03/03/2004 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | CHEN, SOPHIA S | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2852 | |
| DATE MAILED: 03/03/2004 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|----------------------------|------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/864,335 | SUGIMOTO ET AL. | |
| | Examiner Sophia S. Chen | Art Unit 2852 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 27 January 2004.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-5, 7, 8 and 10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 1-4, 8 and 10 is/are allowed.

6) Claim(s) 5 and 7 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 08 April 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR §1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR §1.114, and the fee set forth in 37 CFR §1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR §1.114. Applicant's submission filed on January 27, 2004 has been entered.

Claim Objections

2. Claims 8 and 10 are objected to because of the following informalities: Claim 8, line 9, "g/cm2" should be "g/cm²". Appropriate correction is required.

Claim Rejections – 35 U.S.C. §103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saijo et al., U.S. Pat. No. 4,825,241 (cited in previous Office action), in view of Shoji et al., U.S. Pat. No. 5,937,228 (cited in previous Office action).

Saijo et al. discloses an image carrier 100; a developer carrier comprising a sleeve 5 and a stationary magnet roller 6 accommodated in the sleeve 5 (Figure 1); the magnet roller 6 including a main pole N_1 and an auxiliary pole S_4 (Figure 1); and a ratio of a shortest distance D_s between the image carrier 100 and the developer carrier 5 (0.5 mm; column 5, line 31) to a shortest distance D_b between the developer carrier 5 and a metering member 8 (0.40-0.75 mm; column 5, line 33) is smaller than 0.8.

Saijo et al. differs from the instant claimed invention in not disclosing an electric field including an oscillation component is formed between the image carrier and the developer carrier, wherein the oscillation component is configured to oscillate at least ten times before a give point on the image carrier moves away from a range in which the magnet brush contacts the image carrier; and the oscillation component comprises an asymmetric, rectangular waveform configured to reduce a period of time over which toner contained in the developer migrates toward the image carrier.

Shoji et al. discloses a developing bias 6 comprising an electric field including an oscillation component is formed between an image carrier 10 and a developer carrier 2,

wherein the oscillation component is configured to oscillate at least ten times before a give point on the image carrier 10 moves away from a range in which the magnet brush contacts the image carrier 10 (with the frequency of 2 kHz to 9.5kHz, column 10, lines 20-26); and the oscillation component comprises an asymmetric, rectangular waveform configured to reduce a period of time over which toner contained in the developer migrates toward the image carrier 10 (column 10, lines 15-17 and Figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the developing bias of Shoji et al. to the developer carrier of Saito et al. in order to develop uniform dots (Shoji et al., column 10, lines 15-19).

Allowable Subject Matter

6. Claims 1-4 are allowed.
7. Claims 8 and 10 are allowable over the prior art; however, it is found to be objectionable for the reason specified above.
8. The following is a statement of reasons for the indication of allowable subject matter: Upon reconsideration, claim 8 has been allowed over Nagao, US Pat. No. 5,991,586 because Nagao fails to disclose a ratio of a shortest distance between the image carrier and the developer carrier to an amount of the developer scooped up to the image carrier is smaller than 10 mm/(g/cm²). (Nagao discloses a shortest distance Ds between the image carrier 1 and the developer carrier 11 being 0.35 mm, and the amount of the developer scooped up to the image carrier 1 being 4-6.5 mg/cm² (= 4-6.5x10⁻³ g/cm²). Therefore, the ratio is larger than 10 mm/(g/cm²).)

Response to Arguments

9. Applicant's arguments filed 1/27/04 have been fully considered but they are not persuasive.

Applicants argue that Figures 14 and 15 provide evidence that superior results are derived from the claimed combination of the G_p/G_d ratio and AC bias. Because the claimed parameter were varied both in and out of the claimed ratios, and the results set forth show the advantages of the particular claimed ratios combined with an AC bias, it is respectfully submitted that the unexpected results result from a comparison of the closest image forming techniques available. Applicants request the Examiner to clarify what prior art techniques would be more suitably compared against the claimed parameters if the Examiner disagrees.

The examiner disagrees the unexpected results have been shown because the applicants merely compared with the conventional magnet roller using only a DC bias (-500V) and DC bias plus AC bias (f4.5kHz, Vpp of 800V, duty of 50%). The applicants fail to compare the magnet roller of Saijo et al. with the developing bias of Shoji et al. Merely compared with one AC is not enough to show the unexpected results. At least the AC disclosed in Shoji et al. has to be considered. Therefore, the Examiner expects to see any data to show the ratio with different developing biases (DC+AC).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sophia S. Chen whose telephone number is (703) 308-7617. The examiner can normally be reached on M-F (7:00-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on (703) 308-1373. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sophia S. Chen
Primary Examiner
Art Unit 2852

Ssc
February 23, 2004